Abstracts

Coplanar Waveguides for MMIC Applications: Effect of Upper Shielding, Conductor Backing, Finite-Extent Ground Planes, and Line-to-Line Coupling

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Parasitic effects occurring in actual realizations of coplanar waveguides (CPW) for microwave integrated circuits on GaAs substrates, such as the influence of an upper shield, conductor backing, finite-extent ground planes, and line-to-line coupling, are discussed and evaluated. CAD-oriented analytical expressions are obtained for the electrical quasi-TEM parameters of the relevant waveguiding structures by means of exact or approximate conformal mapping techniques. Differences in electrical behavior with respect to ideal CPW's are highlighted, and practical design criteria are obtained for keeping cover height, ground-plane width, and line-to-line spacing effects to a minimum.

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